DET NORSKE VERITAS

EC-TYPE EXAMINATION CERTIFICATE

[2] EQUIPMENT OR PROTECTED SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 94/9/EC

[3] EC-Type Examination Certificate Number: **DNV-2005-OSL-ATEX-0191**

[4] Equipment or Protective System: **Intrinsic safe Coil with Circuit**
Low Power Intrinsic Safe Coil

[5] Applicant – Manufacturer or Authorized representative: **Rotex Automation Limited**

[6] Address: **987/11, GIDC, Makarapura, Vadodara 390010, India**

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] DNV, notified body number 0575 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. **2005-3272**
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[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014: 1997 + A1: 1999 + A2: 1999, EN 50018: 2000 + A1: 2002, EN 50020: 2002, EN50281-1-1:1998, EN50284:1999 and EN50303:2000

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protected system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system.

[12] The marking of the equipment or protective system shall include the following :

Ex I M1 / II 1 GD T6 EEx ia d IIC T6 (-40° C≤ Ta≤ + 70° C)
EEx ia IIC T6 (-40° C ≤Ta≤ + 70° C)

Høvik, 2005-06-17
for Det Norske Veritas Certification AS

Line Gangeskar
Head of Section

Håkon S. Håkonsen
Senior Engineer

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[13] **Schedule**

[14] **EC-TYPE EXAMINATION CERTIFICATE No.:** DNV-2005-OSL-ATEX-0191

[15] **Description of Equipment or Protective System**

1. **Intrinsically safe coil with Circuit**: Solenoid - IS coil is used for operating a plunger. The Solenoid has a metal housing and the circuit is hermitically sealed. The circuit draws a small current which is stored in a capacitor. When sufficient energy to pull the plunger is stored in the capacitor, a sensor triggers, allowing current to the winding resulting in the movement of the plunger. When the plunger is moved, current charging the capacitor is cut off and is fed to the winding which is sufficient to keep the plunger in the energised position. The IS coil with circuit is designed according to protection "ia" and is housed in an enclosure & encapsulated by Epoxy. The enclosure may be of Aluminium alloy LM6 or Stainless steel.

Type Identification

Type Designation	Description	Cable entry details	ATEX / EEx Marking
62	IS Coil with circuit Enclosure Exd-AL	¾" ET(F)	Ex II 1 GD, EEx ia IIC T6, IP67 (-40°C ≤Ta≤ + 70°C)
63		½"NPT(F)	
64		M20X1.5(F)	
62-CO	IS Coil with circuit Enclosure Exd-SS	¾" ET(F)	Ex I M1, EEx ia IIC T6, IP67 (-40°C ≤Ta≤ + 70°C) or Ex II 1 GD, EEx ia IIC T6, IP67 (-40°C ≤Ta≤ + 70°C)
63-CO		½"NPT(F)	
64-CO		M20X1.5(F)	

Limiting safety value for Intrinsic safe Coil

- Open circuit Voltage ; Ui ≤ 32 V
- Short Circuit Current : *Ii* ≤ 80 mA (IIC), *Ii* ≤ 200 mA (IIA, IIB and group I
- Wattage : Pi =1.2 W
- Inductance : Li = 0
- Capacitance : Ci = 40 pf

Remarks:

- The IS coil with Circuit to be connected / opertated with ATEX CE certified intrinsically safe power supply with above parameters

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Descriptive Documents

Number	Title	Rev.	Date
11-DNV-31001	Intrinsically Safe Coil Driver Circuit Diagram	0	2005.03.27
11-DNV-31101	PCB layout for Intrinsically safe coil	0	2005.03.27
11-DNV-30901	BOM for AB-PCB-199	0	2005.03.27
11-DNV-31201	Pot Core Choke for Intrinsically safe Coil	0	2005.03.27
11-DNV-31301	MFG. Process and Sequence for Intrinsically safe Coil	0	2005.03.27
11-DNV-10401	IS coil with Circuit Enclosure Ex d	0	2005-03-27
11-DNV-10402	Technical data for IS coil with circuit Enclosure Ex d	0	2005.03.27
11-DNV-10403	Name plate	0	2005.03.17

2. **Low power IS coil**: is used for operating the valve plunger through solenoid & is designed according to protection "ia". Low power IS coil is housed in enclosure of types Ex 'd' Enclosure, Terminal Box or Plug In type enclosure.

Type Identification

Type Designation	Description	Cable entry details	ATEX / EEx Marking
71-0 72-0 73-0	Low Power IS Coil Enclosure Exd-Al	¾" ET(F) ½"NPT(F) M20 x 1.5(F)	Ex II 1 GD, EEx ia d IIC T6, IP67 (-40°C ≤Ta≤ + 70°C)
66-CR 67-CR 68-CR	Low Power IS Coil Enclosure TB	¾" ET(F) ½"NPT(F) M20 x 1.5(F)	Ex I M1, EEx ia IIC T6, IP65 (-40°C ≤Ta≤ + 70°C) or, Ex II 1 GD, EEx ia d IIC T6, IP65 (-40°C ≤Ta≤ + 70°C)
65-CR	Low Power IS Coil Enclosure Plug In	Pg9	Ex I M1, EEx ia IIC T6, IP67 (-40°C ≤Ta≤ + 70°C) or Ex II 1 GD, EEx ia d IIC T6, IP67 (-40°C ≤Ta≤ + 70°C)

Limiting safety value for Intrinsic safe Coil

- Open circuit Voltage ; Ui ≤ 32 V
- Short Circuit Current : Ii ≤ 75 mA
- Wattage : Pi 0.75 W
- Inductance : L_i = 0
- Capacitance : C_i = 0

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Remarks:

- The Low Power IS coil to be connected / opertated with ATEX CE certified intrinsically safe power supply with above parameter
- Cable entry to be fitted with ATEX CE certified cable gland

Descriptive Documents

Number	Title	Rev.	Date
11-DNV-30501	Low Power IS Coil Enclosure Ex d	0	2005.03.27
11-DNV-30502	Technical data for Low Power IS Coil Enclosure Ex d	0	2005.03.27
11-DNV-30503	Low Power IS Coil	0	2005.03.27
11-DNV-30601	Low Power IS Coil Enclosure TB	0	2005.03.27
11-DNV-30602	Technical data for Low Power IS Coil Enclosure TB	0	2005.03.27
11-DNV-30701	Low Power IS Coil Enclosure Plug In type	0	2005.03.27
11-DNV-30702	Technical data for Low Power IS Coil Enclosure Plug IN	0	2005.03.27
11-DNV-30504	Name Plate	0	2005.03.17
11-DNV-30604	Name Plate	0	2005.03.17

[16] Report No.: 2005-3272
Project No.:

[17] Special Conditions for Safe Use
None

[18] Essential Health and Safety Requirements
See part 9 of this certificate

END OF CERTIFICATE

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.